

Appendix I

Fratricide Prevention

GENERAL

I-1. Fratricide is the employment of friendly weapons and munitions with the intent to kill the enemy or destroy his equipment or facilities, which results in unforeseen and unintentional death or injury to friendly personnel. Fratricide is a grim fact in combat operations. Such incidents cover a wide spectrum of conditions, but historically, they are most likely to occur in the early stages of combat, during reduced visibility or along shared unit boundaries. In previous 20th century conflicts, supporting fires (air and artillery) accounted for almost 75 percent of fratricide incidents and an even greater proportion of friendly fire casualties. However, this proportion may be changing for modernized armored forces in high intensity scenarios due to advances in direct fire technology and tactics.

CAUSES AND EFFECTS

I-2. Every incident of fratricide is a function of many contributing factors or preconditions. Ultimately, the combination of these factors leads to an individual or unit error that produces friendly casualties. As an example, incomplete planning or poor maneuver control can cause forces to converge or intermingle on the battlefield. The resulting local increase in weapons density greatly increases the likelihood of a friend-on-friend engagement. This appendix will help leaders better anticipate and minimize the most important conditions that lead to fratricide such as weapons density.

PRIMARY CAUSES OF FRATRICIDE

SITUATIONAL AWARENESS

Inadequate Fire and Maneuver Control

I-3. Units may fail to disseminate (via troop-leading procedures and rehearsals) the minimum necessary maneuver and fire control measures to coordinate activities on the ground. Improper use or inconsistent understanding can likewise make control measures ineffective. Situational awareness decreases as density of forces increases when units operate without proper dispersion and spatial separation. This is compounded by plans that allow forces to converge or intermingle without adequate controls. As the battle develops, the plan cannot address obvious enemy moves as they occur and synchronization fails.

Direct Fire Control Failures

I-4. Defensive and particularly offensive fire control plans may not be developed or may fail in execution. Some units do not designate target

reference points, EAs, and priorities. Some may designate but fail to adhere to them. Units fail to tie control measures to recognizable terrain features. Weapons positioning can be poor, and fire discipline can break down upon contact.

Land Navigation Failures

I-5. Navigation is often complicated by difficult terrain or weather and visibility. Navigation problems can cause units to stray out of sector, report wrong locations, become disoriented, or employ FS weapons from wrong locations. As a result, friendly units may collide unexpectedly or be erroneously engaged.

Reporting, Crosstalk, and Battle Tracking Failures

I-6. Commanders, leaders and their CPs at all levels often do not generate timely, accurate, and complete reports or track subordinates as locations and the tactical situation change. Commanders are unable to maintain situational awareness. This distorts the picture at each level and permits the erroneous clearance of fires (both direct and indirect) and violations of danger close.

Known Battlefield Hazards

I-7. Unexploded ordnance, unmarked and unrecorded minefields, FASCAM, flying debris from discarding SABOTs and illumination rounds, and booby traps litter the battlefield. Failure to make, record, remove, or otherwise anticipate these threats leads to casualties.

POSITIVE IDENTIFICATION

I-8. Vehicle commanders, gunners, and helicopter pilots cannot distinguish friendly and enemy thermal and optical signatures at the ranges that they can be acquired. Our weapons can kill beyond the ranges where we have clear ID. Our tactics and doctrine lead us to exploit our range advantage over the enemy. During limited visibility or in restricted terrain, units in proximity can mistake each other for the enemy due to short engagement windows and decision time. We do not have a means to determine friend or foe, other than visual recognition of our forces and the enemy's. When the enemy and our allies are equipped similarly, and when the enemy uses U.S. and allied equipment, the problem is compounded. Simple, effective fire and maneuver control measures and plans, good situational awareness, and disciplined engagements are absolutely necessary.

OTHER

I-9. Another cause is weapons errors. Lapses in unit and individual discipline or violations of the ROE allow errors that are not merely accidents. Examples are out-of-sector engagements, unauthorized discharges, mistakes with explosives and hand grenades, charge errors, incorrect gun data, and similar incidents.

PRIMARY CONTRIBUTING FACTORS

MISSION

- High vehicle or weapons density.
- Commander's intent is unclear or complex.
- Poor coordination.
- Crosstalk lacking.
- No habitual relationships.
- Incomplete graphic control measures.

ENEMY

- Weak intelligence or reconnaissance.
- Intermingled with friendly.

TERRAIN

- Obscuration or poor visibility.
- Extreme engagement ranges.
- Navigation difficulty.
- Absence of recognizable features.

TROOPS AND EQUIPMENT

- High weapons lethality.
- Unseasoned leaders or troops.
- Poor fire control SOPs.
- Incomplete ROE.
- Anxiety or confusion.
- Failure to adhere to SOPs.
- Unreliable navigation systems.

TIME

- Soldier and leader fatigue.
- Inadequate rehearsals.
- Short planning time.

ROLE OF CONTRIBUTING FACTORS

I-10. Contributing factors (such as anxiety, confusion, bad weather, and inadequate preparation) may greatly increase the chances of a navigation error that causes fratricide. Short planning time, failure to rehearse, and leader fatigue are other preconditions that may result in a fatally flawed plan or lack of appropriate control measures. Every mission will involve a unique mix of these factors and their relative importance will vary. In some cases, favorable conditions may compensate for a fratricide contributing factor (for example, a bright moonlight reduces navigation and control challenges), or two otherwise minor conditions may combine to greatly

increase risk (inexperienced flank platoon leader develops communication problems). These contributing factors are a critical dimension of realistic training to reduce fratricide.

EFFECTS OF FRATRICIDE

I-11. The effects of fratricide can be devastating and spread rapidly throughout a unit. Fratricide increases the risk of unacceptable losses and the risk of mission failure. Fratricide seriously affects the unit's ability to survive and function. Observations of units experiencing fratricide include—

- Hesitation to conduct limited visibility operations.
- Loss of confidence in the unit's leadership.
- Increase of leader self-doubt.
- Hesitation to use supporting combat systems.
- Oversupervision of units.
- Loss of initiative.
- Loss of aggressiveness during fire and maneuver.
- Disrupted operations.
- Needless loss of combat power.
- General degradation of cohesion and morale.

FRATRICIDE RISK ASSESSMENT IN PERSPECTIVE

I-12. The tactically competent and savvy leader must consider the risk of fratricide, take appropriate commonsense measures to reduce the risk and integrate those measures into his mission planning and execution. Combat is inherently risky, but the prudent leader takes reasonable measures to reduce the risk. Good commanders are careful not to place undue emphasis on risk avoidance and thus increase timidity and hesitance during battle. We fight and win by focusing overwhelming combat power on the enemy from three or four different systems, thus, giving him several different ways to die all at once. Sensitivity to fratricide risk reduction should not deter this focus on decisive, integrated combined arms engagements. Fratricide prevention must be part of operational planning.

TECHNIQUES OF RISK REDUCTION

I-13. We have discussed the primary causes of fratricide and the consequences of adverse preconditions and contributing factors. Now we will discuss a technique that allows troop leaders to anticipate these circumstances, assess the relative impact of each contributing factor, and employ risk-reducing measures. The leader's primary focus is on reducing the likelihood of fratricide. Fratricide should be addressed early-on in the planning process. As part of accomplishing your mission while preserving combat power, you should identify and incorporate necessary fratricide prevention measures. Be sure to update your assessment "in-stride" as the

situation develops. The fratricide risk assessment matrix will allow you to address fratricide using the following steps:

- Identify the fratricide risks using the matrix during your analysis of METT-T factors.
- Use each submatrix to assess possible fratricide loss and probability.
- Make decisions and develop ways and means to reduce risks.
- Implement measures by integrating them into plans, orders, SOPs, training performance standards, and rehearsals.
- Supervise and enforce safety measures and standards.

FRATRICIDE RISK ASSESSMENT MATRIX

I-14. Leaders at squad, section, and platoon levels must consciously identify specific fratricide risk for any mission. Using this structured approach, troop commanders and platoon leaders can predict the most likely causes of fratricide and take action to protect their soldiers. Whether used for an actual combat operation or a training event, this thought process complements the troop leading procedures and analysis of METT-T factors in planning. The fratricide risk assessment matrix shows an approach to assess the relative risk of fratricide for combat maneuver platoons and companies. To assign a risk value to each direct cause of fratricide from the previous section, we pair the most critical METT-T contributing factors associated with each cause. For each primary cause, favorable conditions lead to the lower left corner of the matrix and lesser risk values. As either contributing factor becomes unfavorable, risk increases, with the worst precondition for each kind of fratricide represented by the upper right hand corner of the matrix. Figure I-1 is an example of a fratricide risk assessment matrix that should be used in assessing every mission.

FRATRICIDE RISK REDUCTION MEASURES

I-15. The key to solving fratricide problems is detailed planning and rehearsals to minimize predictable risks. Units must tailor and practice combat skills constantly during collective training opportunities. Ultimately, the only effective techniques will be those soldiers who understand, innovate and refine themselves, practice frequently, and integrate into unit SOPs. Figure I-2 is a chart that can be used in determining the risk reduction measures that can be applied to reduce the possibility of fratricide. Using the METT-T acronym, the following is a list of recommended reduction measures.

SITUATION AWARENESS			
FIRE & MANEUVER CONTROL			RATING
DENSITY OF FORCES	CLARITY OF THE SITUATION		
	Maintain Force Separation	Forces Converge	Forces Intermingle
Heavy	5	7	9
Normal	3	5	7
Sparse	1	3	5
FIRE DISTRIBUTION PLAN			RATING
PREP TIME REHEARSALS DISSEMINATION	COLLECTIVE PROFICIENCY		
	Strong SOPs Hab Atchmnts	Mod Trained or Fam Tsk Org	Unseasoned & Unfam Tsk Org
Brief back Rehearsals	3	4	5
Reduced Force Rehearsals	2	3	4
Full Force Rehearsals	1	2	3
LAND NAVIGATION			RATING
EXTENT OF RECON & IPB	VISIBILITY & NAVIGATION DIFFICULTY		
	Ample Controls High Confidence	Confidence with Much Effort	Very Difficult Low Confidence
Minimal	3	4	5
Limited	2	3	4
Extensive	1	2	3
FIRE CONTROL & BATTLE TRACKING			RATING
CLEARANCE OF FIRES	COMMO & CROSSTALK		
	Reliable Redundant	Adequate Means	Unreliable No Backups
Passive Only	21	23	25
Positive	1	3	5

BATTLEFIELD HAZARDS				RATING
USE OF ADD'L DUD-PRODUCING MUNITIONS	KNOWLEDGE OF EXISTING HAZARDS			
	Extensive	Partial	Extremely Limited	
	Unknown	3	4	5
	Major	2	3	4
Minor	1	2	3	

POSITIVE IDENTIFICATION

COMBAT IDENTIFICATION				RATING
ENGAGEMENT RANGES & FIELDS OF FIRE	VISIBILITY & NAVIGATION DIFFICULTY			
	Practiced Very Effective	Expedient Somewhat Effective	Marginally Effective	
ID Unlikely	3	6	7	
Marginal ID	2	4	5	
Optimal ID	1	2	3	

DISCIPLINE

FIRE CONTROL DISCIPLINE				RATING
COMMAND & CONTROL OR SUPERVISION	VISIBILITY & NAVIGATION DIFFICULTY			
	Complete & Effective	Complete Somewhat Effective	Expedient Untested	
Ad Hoc-Improvised	4	6	7	
Attached	2	4	5	
Organic	1	2	3	

TROOPS

SOLDIER & LEADER PREPAREDNESS				RATING
MISSION-RELATED EXPERIENCE & COMPETENCE	SOLDIER & LEADER FATIGUE			
	Rested Low Exertion	Mod Rest & Exertion	Limited Rest High Exertion	
	Unseasoned	5	7	9
	Moderate Experience	3	5	7
Highly Experienced	1	3	5	

LOW RISK	CAUTION	HIGH RISK	TOTAL
8 to 20	21 to 30	>30	

Figure I-1. Sample Format for a Fratricide Risk Assessment Matrix

FRATRICIDE Risk Reduction Measures	<div> Routine Measures Low Risk <div> <div></div> <div>Caution</div> <div></div> </div> </div> Extraordinary Measures High Risk		
● FIRE AND MANEUVER CONTROL	Brief Backs Supervision PMCS & Pre Combat Checks	Lim Vis Rehearsal Reinforce CleAr Intent Cross-Level/ Consolidate Equip	Converging/ Adj Forces Rehearsals Task Force Rehearsal
● FIRE DISTRIBUTION PLAN	Extensive Rehearsals SOPs Synchronization matrix	Modify Task Organization Some Direct Fire Units-Wpns Hold or Tight Limited Visibility Plan	Multiple Synchronization Rehearsals Modify Plan Limited Objectives
● LAND NAVIGATION	Detailed Navigation Plan Reconnaissance Confirms Impact of Terrain-Weather-Enemy	Ground Guides/Night Vision Aids Redundant Navigation Aids Marking Enemy Positions	Multi-Echelon Navigation Extensive Recon/Centralization Reduce Equipment Dependence
● FIRE CONTROL AND BATTLE TRACKING	Positive Clearance of Fires Commo Checks Fire Support Rehearsal	Positive Clearance of Fires Restrictive Control Measures SOP Guides/Beacons/Vectoring	POSITIVE Clearance of Fires More Leaders Forward Redundant Commo Provide Backups
● BATTLEFIELD HAZARDS	Safety Discipline Disseminate Known Hazards	Vehicle Hazards Considered Rehearse React to Hazard Review Equip Limitations	Add Intermediate Objectives Special Log/Maint Actions Detailed Deception
● COMBAT IDENTIFICATION	Sustain CVI Skills Boresight Cbt Vehicle Recognition Sys	CBT ID Enhancements IFF Expedients for Exposed Elements	Clear IR Friendly Marking Multiple Recognition Signals
● FIRE CONTROL DISCIPLINE	Review ROE Challenge/Password Discipline Inspections Buddy System	Lighten Load/Review Equip List Simplified Plan Simplicity/Repetition Modify ROE	Interim Halts/Assessments Challenge/Password Enhancements Rotate High Stress Positions
● SOLDIER AND LEADER PREPAREDNESS	Address Seasonal Hazards Sustainment Training Sustain Morale Full Troop Leading Process Sleep Plan	Max Use of Transport Abbreviated Troop Leading Process Refresh Mission Specific Skills Controlled Pace In Execution	Priority of Tasks Priority of Rehearsals FRAGO only for Efficiency Request Additional Combat Power Don't Exceed Tng Proficiency

Figure I-2. Risk Reduction Measures

MISSION

- Tactically sound and simple scheme of maneuver.
- Complete and concise orders.
- Doctrinally and tactically correct clearance of fires.
- CPs and TOCs accurately track the battle; render timely reports.
- Maintain graphics two levels down.
- Use large-scale battalion and brigade sector sketches for detail.
- Coordinate with adjacent units; track adjacent battle.
- Subcompartment sectors and assign responsibility during stability operations and support operations.
- Coordinate and communicate aviation and maneuver elements.
- Get air tasking order a day prior, to see what aviation assets will be operating in your units AO.
- Clear fires around BSA—FA Bn HHB Cdr is FSO for the FSB.
- Only allow the QRF in the BSA perimeter.
- Special operations C² element. SOCCE is the key to coordination of SOF and conventional unit maneuver.
- Anticipate or assess fratricide risk during planning.
- Send key leader on objective reconnaissance (such as the squad leader from the lead platoon).
- Detailed EA development and direct fire planning.

ENEMY

- Know enemy characteristics and equipment.
- Know hostile criteria and enemy aircraft flight profiles.
- Additional recognition signals or markers.

TERRAIN

- Navigate accurately—know your location.
- Fire control measures on identifiable terrain.
- Unit boundaries on identifiable terrain.
- OCOKA analysis to identify fratricide risk.
- Redundant NAVAIDS or checks.
- Control the MSR—know what should be on it and what should not.
- Thorough map reconnaissance.
- Detailed map preparation.

TROOPS AND EQUIPMENT

- Always rehearse—do not accept excuses.
- Consider limited visibility rehearsal.
- Situational awareness—units, enemy, hazards.

- Know your weapon and vehicle orientation.
- Anticipate where weapon system density will be highest.
- Recognize battlefield stress.
- Use validated SOPs to simplify operations.
- Know ROE.
- Accurate and timely spot reports.
- Positive target identification—do not shoot first and ask questions later.
- Sustain good aircraft identification training program.
- Train BSA troops in threat ID and survivability skills.
- Know friendly weapons effects.
- Accurately program onboard navigation systems. Do not input friendly unit locations into target navigation index.

TIME

- Maximize planning time.
- Prioritize tasks, rehearsals, or reconnaissance.
- Multiple WARNORDs and FRAGOs to save time.
- Adjust pace and tempo.